Hackathon 2024

Ramnarain Ruia Autonomous College

Matunga East, Mumbai-400019

Project Name:-Viksit Infra

REPORT

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CC:- Microsoft

1)Introduction:

Fatal Infrastructure Failures; India's Shameful Legacy of Negligence

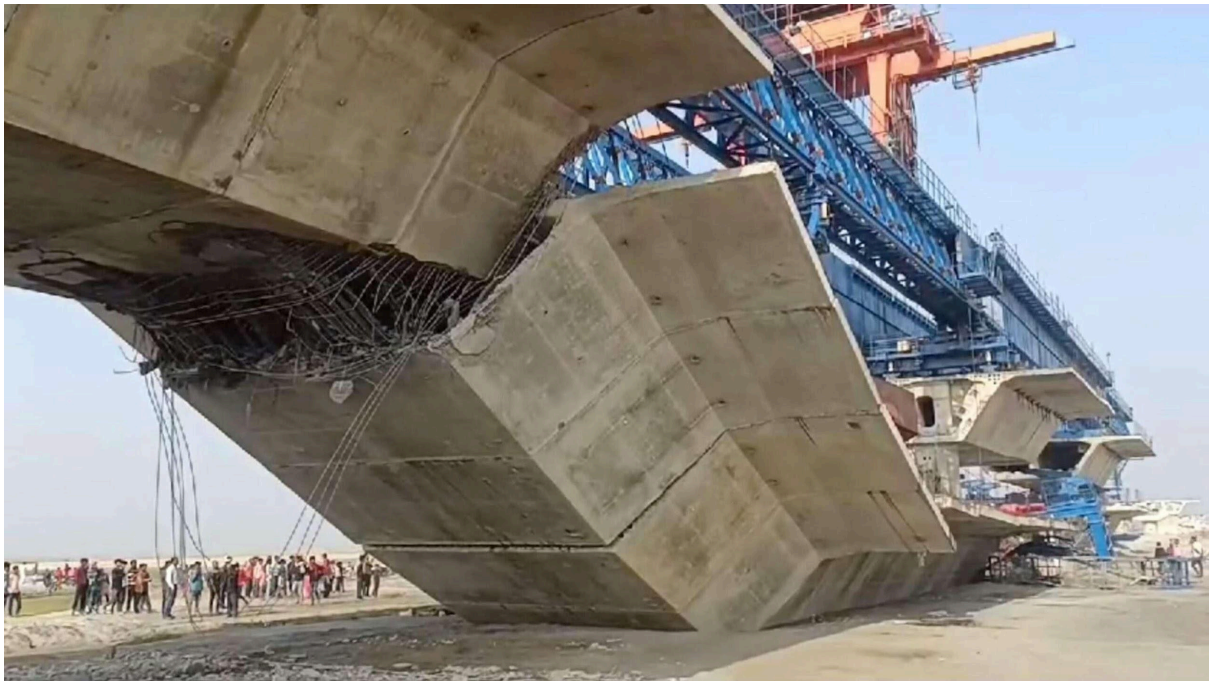
On 28th June, 2024, 45-year-old Ramesh Kumar went to Delhi Airport to drop off his customer. He was working overtime because he wanted to earn more money for his elder daughter's wedding. As soon as he dropped his customer, the roof of Delhi Airport's Terminal 1 fell on his car and he died.

On 27th June, 2024, the roof of Jabalpur's recently inaugurated airport collapsed. On 1st July, two people were killed in Mathura when a 250,000 litre water tank collapsed. Ayodhya is in such a state that even few news channels are reporting that only Lord Ram can save it.

"Can only Lord Ram save Ayodhya now?"

The gutters of Gurgaon have become fountains. But all the records have been broken in Bihar, where **13 bridges have collapsed in 3 weeks**. Life in India is so cheap that as soon as people step out of the house, either a hoarding will fall on them, or the roof of the airport, or the bridge will slip off their feet.

According to an official data, between 2018 and 2022, 8,500 people have died because of the collapse of public infrastructure. So who's responsible for this?



Why is India's infrastructure so bad?

To understand why the infrastructure in our country is so bad, one needs to understand the process of an infrastructure project.

First, a contract is given to a company. Then the company designs and executes the project. After that, the infrastructure has to be maintained. For this, safety audits needs to be conducted. But in India, the problem starts at the contract stage. **The main reason for this is that the government uses L1 contracts.**

What are L1 contracts?

Let's take an example

On March 31, 2016, at around 12.30 pm, there was a huge crowd at Vivekananda Road near the Girish Park metro station in Kolkata. Some people were going to work, while others were going for lunch break. At this time, an under-construction part of the Vivekanand flyover fell on people. 26 people were crushed. Why?

The company that built the flyover, IVRCL, its operations director, AGK Murthy, said that it was an act of God. But it wasn't an act of God. It happened because of IVRCL. Because 7 years ago, they submitted the lowest bid to win a

contract. In its report, IIT Kharagpur also said that the company tried to save costs at every level. Because of this, the flyover collapsed.

But this isn't a single incident.

On October 30, 2022, the Morbi Bridge in Gujarat collapsed because of which 140 people lost their lives.

"**In Gujarat's Morbi, on Sunday evening,** a cable bridge built on the Machchu River broke down." During this incident, many people were on the bridge and they fell on the river. **The Gujarat government gave a contract to a local company, Oreva, to repair the 100-year-old suspension bridge. But Oreva's main business was to make clocks and lighting.**

"The renovation contract was given to a company that makes clocks, calculators, not constructions, and certainly not bridges"

There was no evidence that this company had experience in repairing bridges. And this is a systemic problem in India. Because the government uses the L1 method to issue contracts. **The L1 method is the lowest-cost method**. That is, the contract is issued to the company that can work at the lowest cost. It doesn't matter if the contractor has experience or quality.

A report by the Indian government showed that many projects fail because of this method. **In 2002, the Central Vigilance Commission, a government body, reported that many contracts are issued to companies that don't have any qualifications. And this is because of the L1 method.**

Many companies make a fake budget to win a contract. They deliberately show a low cost for everything. If they show a low cost, they'll win the contract. And this is what happens. But the government is trying to change this. **On October 29, 2021, the Finance Ministry issued new guidelines on contracts. They said that the quality of the contractor will be assessed before issuing the contract. This system is called quality-cum-cost based selection.**

But in its press release, the ministry also said that this system won't replace the traditional L1 system. In fact, it will be used in a few cases. In 2021, the government said that this new system will only be used for contracts worth less than Rs. 10 crores. Two years later, this was changed. But the government still didn't say that this new system will be used in all projects. So even today, L1 systems are used to develop infrastructure.

Even in this new system, not every contractor criterion is evaluated. But this isn't logical.

Does a government minister go to a contractor who is the cheapest to build a house? Or does he go to a contractor who has a good quality and budget?

If the ministers use this system for their homes, shouldn't they use the same logic for the infrastructure of the country?

The infrastructure that millions of people use. But the government isn't doing this. To save money in the short term, it's compromising the lives of the people in the long term.

The solution is very simple.

Many researchers have written about this solution. It's a multi-criteria contractor selection framework. Under this, multiple criteria of the contractor will be evaluated. Be it bid price, financial capabilities, technical capabilities, experience, performance, or health safety. **India isn't the first country to implement this system. This system is used in the US and Europe. But the problem is that it's difficult to take bribes in this system.**

Even after securing the contract, companies make a second mistake. They don't design the infrastructure properly.

For example, look at this.

In June 2022, PM Modi inaugurated the Pragati Maidan Corridor project. It cost Rs.777 crore. The PM said that a magnificent tunnel was built in such a short time. "In such a short time, it wasn't easy to build this integrated transit corridor." But what happened after two years? The tunnel became useless.

"Now the condition of the Pragati Maidan is not disastrous. In the monsoon season of last year, this project was non-operational for the general public because of water blockages. So a project was built with a cost of Rs.800 crore. And in two years, it became useless. It was said that many advanced facilities are being used in this tunnel, like automated drainage.

But the Public Works Department said that this project had technical and design flaws. Many flaws were revealed. Cracks, drainage, and water seepage. **Archit Pratap Singh, an urban planning expert, said that to build a good underground tunnel, you need to look at the soil and rock conditions. But the Pragati Maidan Tunnel project didn't do this. That's why it had poor waterproofing.**

The water seepage problem was seen in Bihar as well. The bridges here are falling apart like a house of cards. "**Only 3 weeks ago, the monsoon reached Bihar**." "But more than the water, the bridges are falling down." The bridge across Janata Bazaar has fallen. Every day, news of a bridge collapse appears. In just 13 days, 13 bridges have fallen.

In Bhagalpur, an under-construction bridge built on the Ganga river, fell not once, but twice. How much money was spent? Rs. 1,700 crore.

Construction engineer Soni Yadav said that these projects didn't conduct proper soil testing. Why? Because the contractor wanted to save money. **And corruption is rampant in Bihar. Prashant Kishore says that if you spend Rs. 100 to build a road, then Rs. 40 are stolen. And the road is built for Rs. 60. But the budget is not what should be blamed.**

Have a look at India's space organisation ISRO.

Its budget is much lower than other space organisations. Still they have good accomplishments. The reason behind this is the technical quality of their staff, which is still missing in the Indian construction industry.

Soni Yadav says that local contractors don't follow the blueprint and instructions properly. Whereas in Japan, if a building is built that is more than 5 storeys long, you have to procure structural and aerodynamic certification from the government agency. Wind tunnels and simulations are used to test whether the new building will be able to stand there or not. For such technical requirements, India needs good engineers.

Even in the midst of unemployment, large construction companies like Larsen and Toubro have a shortage of engineers and techies. L&T says that the problem is that skilled engineers go to the Middle East because they get good pay and have a good work environment. Only those engineers are left who don't have the skills.

There is a need to fill the skill gap or the contractors will keep making mistakes. And even when they do, they don't get caught due to poor auditing.

In 2019, Mumbai's footover bridge collapsed, killing 6 people. 6 months before the incident, Mumbai's municipal corporation BMC got an audit report saying the bridge was fit to use, but it needed minor repairs. This audit was conducted when 3 years ago, another bridge collapsed on the Mumbai-Goa highway. BMC gave a contract to a company to audit 314 subways, skywalks, and bridges in Mumbai.

In the audit, it was said that 14 out of 314 should be demolished, 47 needed major repairs, 176 needed minor repairs, and 77 were fine. And this CSG bridge was one of those 176 bridges that were deemed fit to use with minor repairs. If only minor repairs were needed, would the bridge have collapsed like this in 6 months?

But after this incident, another BMC report said that the audit wasn't conducted properly. Then Mumbai police arrested Auditor Neeraj Kumar Desai, whose company declared the bridge safe, despite the corrosion in the structure. Two engineers from the BMC's Bridges Department were also arrested for not performing their duties properly. But this is just one example of how lightly the government officials take public safety.

The same thing happened in Delhi.

After the Delhi airport roof collapsed when the Aviation Minister was told that the collapsed pillar had corrosion, he said that he will check whether the safety audit was conducted properly or not.

The problem is that there's no organisation in our country that's responsible for safety audits. So whenever a roof or flyover falls, people don't know who to blame. If you protest, the government either fires or arrests some people. But there's no structural change in our government.

It is seen in the case of Gujarat.

When the Morbi Bridge collapsed, the Municipal Authority found out that the bridge was opened without a clearance certificate. Nine people were arrested to appease the public, including a ticketing clerk and three security guards, because they didn't regulate the crowd properly.

But no one in the government took responsibility.

In fact, a few weeks ago, the Gujarat High Court asked the Gujarat government they had to submit an action-taken report after forming the Special Investigation Team but that didn't happen.

In fact, the state High Court is asking the government who's responsible for this. If the state High Court doesn't know, who are we to find out?

It is also seen what is happening with the money in the Pragati Maidan Tunnel in Delhi. After the tunnel became useless, the Public Work Department filed a fine on Larsen & Toubro Company saying that the project had serious technical and design errors.

After that, the L&T put a counter-claim on the government of Rs 500 crores. So now they'll fight over who's at fault, while you'll lose your life. **The accountability problem in Delhi is even more serious. After a day's rain, Delhi was completely shut down. It's true that the rain was heavy, but the government didn't even prepare properly.**

The Delhi High Court, in fact, predicted this situation and said that the Delhi government should remove the waste from the 22 open tunnels to clear the blockage. **But the Delhi government said in response that they only control 3 out of 22 tunnels. 19 are under other departments. And this is true.** This is the main problem in Delhi. People don't know who's controlling what. There are 4,000 km of stormwater drains in Delhi, which are controlled by 8 different authorities. 8!

Now who will to blame?

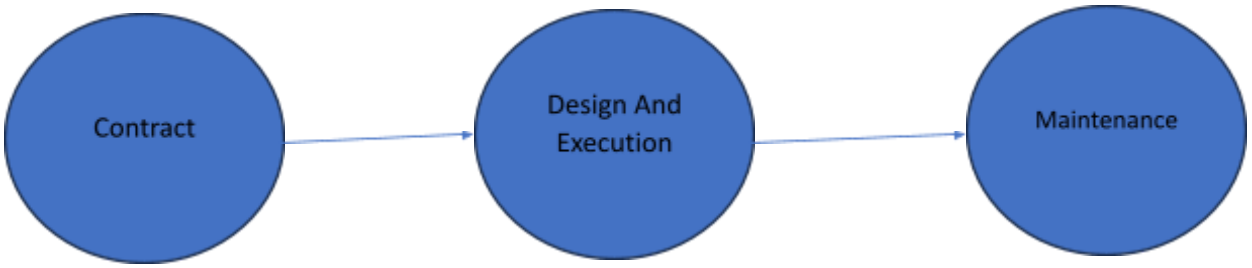
Who will to shout at?

- This is the state of roads and bridges.
- The Indian Railways manages the railway bridge.
- The National Highway Authority manages the national highway bridges.
- The Border Road Organization manages the border areas.
- The State Highway Authority manages the PWDs.

So people don't know which department is working on what. And if a gutter overflows in Delhi, how will everyone know which authority to call out of the 8?

That's why the High Court said that the government should fix this responsibility on one authority. Because the lives of Indians are not as cheap as the governments think.

Process of construction of infrastructure projects in India



No Safety Audits | Submitting Fake Budget |

Causes

L1 Contract

Design and Structural Flaws

Poor Audits

L1 Method (Low-Cost Method)

Company Name	Lowest Bidding amount
Company A	120 Cr
Company B	111 Cr
Company C	110 Cr
Company D	105 Cr
Company E	102 Cr (Lowest Bid)

Multi-Criteria contractor selection Framework:-

- Bid
- Financial Capabilities
- Tech. Capabilities
- Experience
- Performance
- Health And Safety

2)Project Overview:

In India, the process of awarding government contracts for infrastructure projects is frequently plagued by a lack of transparency, corruption, and inadequate public involvement. These issues result in several critical problems: firstly, the opaque nature of contract allocations often means that the process is shielded from public scrutiny, undermining accountability. Secondly, this lack of transparency fosters an environment ripe for favoritism, where contracts may be awarded based on connections rather than the merit of the contractors. Consequently, substandard contractors are sometimes chosen, leading to poor-quality infrastructure projects that are prone to early failure. Additionally, the exclusion of citizens from the decision-making process creates a disconnect between public needs and the infrastructure projects being undertaken.

To address these systemic issues, our project proposes a novel solution: a Transparent Web Platform designed to revolutionize the government contracting process. This platform will enhance transparency by providing comprehensive information about each new infrastructure project, making the contracting process more open and

accessible to the public. It will offer detailed profiles of contractors bidding for projects, including budget proposals, financial and technical capabilities, experience, performance history, and health and safety records. Moreover, the platform will feature a citizen voting mechanism, allowing the public to participate in selecting the most qualified contractor, ensuring decisions are based on merit and public input. By integrating these features, the platform aims to reduce corruption, improve the quality of infrastructure projects, and rebuild public trust in government processes. Through this approach, our solution seeks to create a more transparent, accountable, and citizen-driven framework for infrastructure development

3)Technology Stack:

a. Code Editor: VSCode.

b. Modelling: eraser.io , excalidraw.

c. Designing: Figma.

e. Front-end: HTML, CSS, JS.

f. Back-end: PHP.

g. Testing: Unit Testing

h. Frameworks:

- **Frontend:** Bootstrap

j. Database: MySQL

4)Objectives:

1. **Enhance Transparency:** Provide a clear and accessible platform where detailed information about government infrastructure projects and bidding contractors is available to the public.

2. **Reduce Corruption:** Mitigate opportunities for corrupt practices by making the contract allocation process open and accountable, with public scrutiny and involvement.

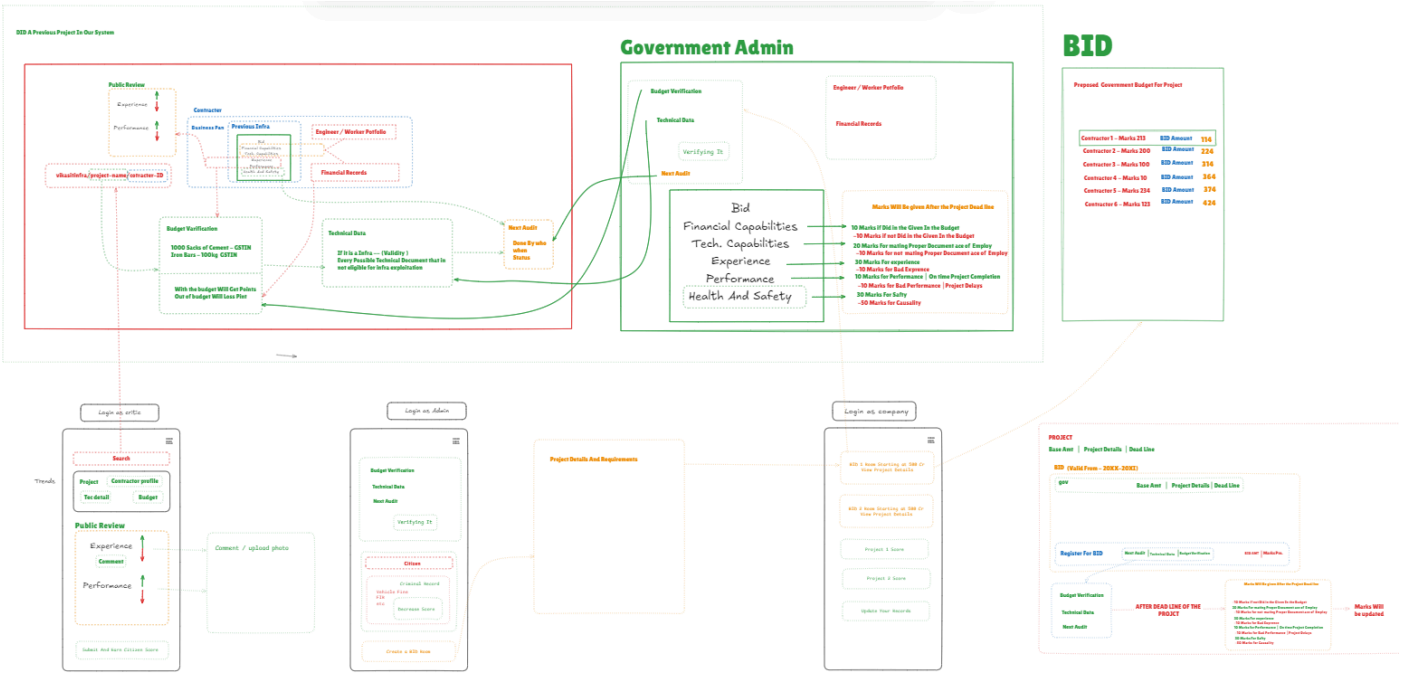
3. **Empower Citizens:** Enable citizens to participate actively in the decision-making process by allowing them to vote on which contractor should be awarded each project.

4. **Improve Contractor Selection:** Ensure that contracts are awarded based on comprehensive evaluations of contractors' budgets, financial capabilities, technical expertise, experience, and safety records.

5. **Strengthen Public Trust:** Build greater trust between the government and citizens by fostering a more transparent and participatory approach to managing infrastructure projects.

6. **Enhance Infrastructure Quality:** Contribute to the development of higher-quality infrastructure by ensuring that projects are awarded to the most qualified and capable contractors.

5)Architecture:



a)Login as a Critic:

Search Contractor Profiles: Users can search for and view detailed profiles of listed contractors. This includes information on their budgets, project materials, technical details, and other relevant data.

Public Review Section: A section where citizens can post reviews about contractors, including both positive and negative feedback. Users can also upload pictures to accompany their reviews before submitting them.

b)Government Admin Panel:

Budget Verification: Review and verify the proposed budget for each project to ensure it meets requirements.

Technical Data Verification: Validate the technical details of the project with engineers to confirm accuracy and feasibility.

Works' Portfolio and Financial Records: Evaluate the contractor's previous work and financial records to assess their credibility and capability.

Scoring System: Assign scores out of 100 based on six criteria—Bid, Financial Capabilities, Technical Capabilities, Experience, Performance, and Health and Safety.

Negative Marking: Implement penalties for any issues or deficiencies found in the contractor's bid or performance related to the six criteria.

c)Login as Admin:

Budget Verification: Review and confirm the proposed budget for each project.

Technical Data Verification: Validate the technical aspects of the project to ensure they meet standards.

Next Audit: Schedule and manage upcoming audits related to projects or contractors.

Verification Button: A feature to initiate and manage the verification processes for budget, technical data, and audits.

Citizen Card Check: Access and review information such as FIRs and vehicle fines using an Aadhaar card number. This information can affect the citizen's voting score.

d)Login as Company:

Project Details and Requirements: Access the details and requirements of projects from the admin.

Budget and Technical Data Verification: Verify the budget and technical data through the Government Admin Page, including the contractor's marks.

Bid Amount Display: Publicly display the contractor’s bid amount to ensure transparency and inform citizens.

6)Features:

a)Transparent Contractor Profiles: Detailed profiles of bidding contractors, including budgets, technical details, past performance, and safety records, are made available to the public for informed decision-making.

b)Public Review and Feedback: Citizens can post reviews and upload pictures related to contractors, allowing for public feedback and greater accountability.

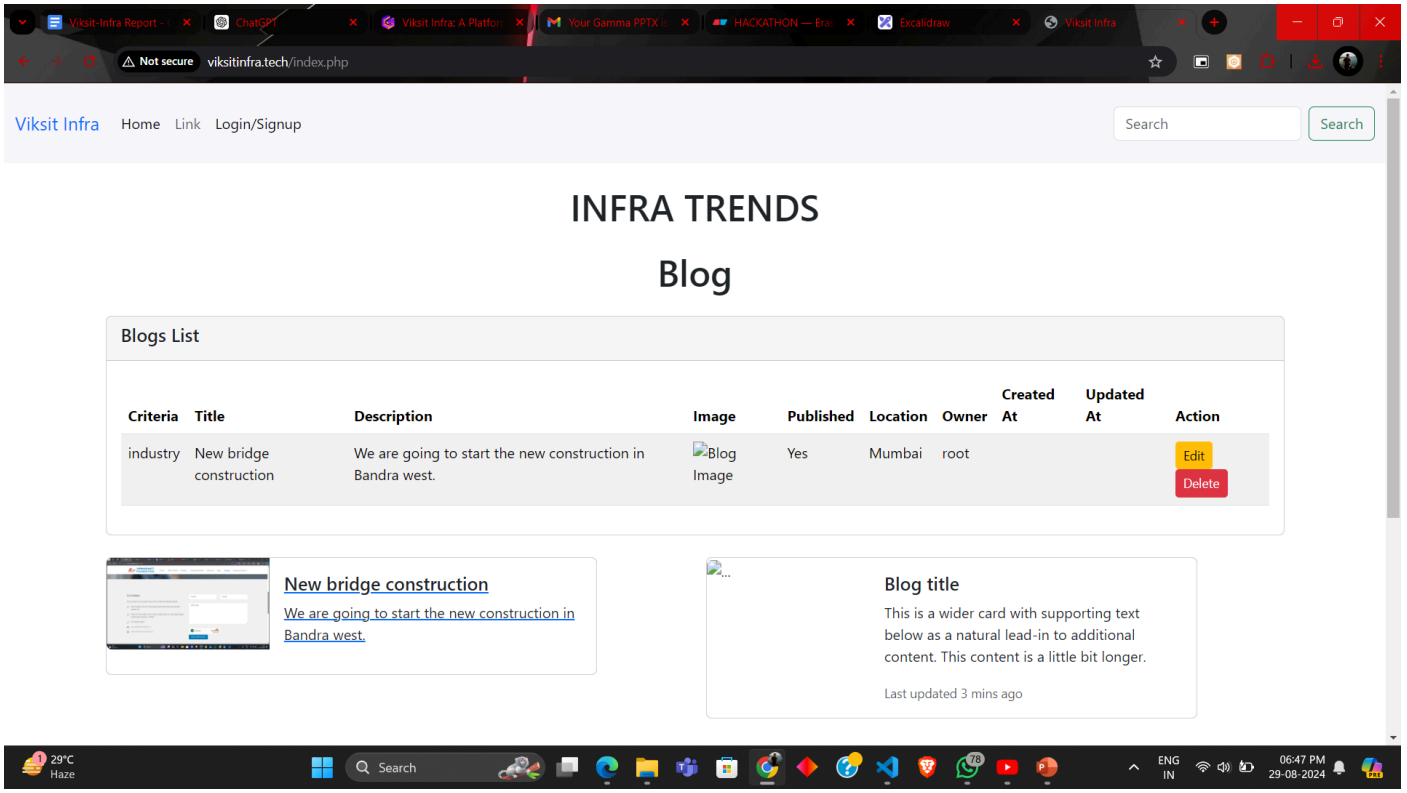
c)Integrated Scoring System: Contractors are evaluated and scored out of 100 based on six key criteria—Bid, Financial Capabilities, Technical Capabilities, Experience, Performance, and Health and Safety—with provisions for negative marking.

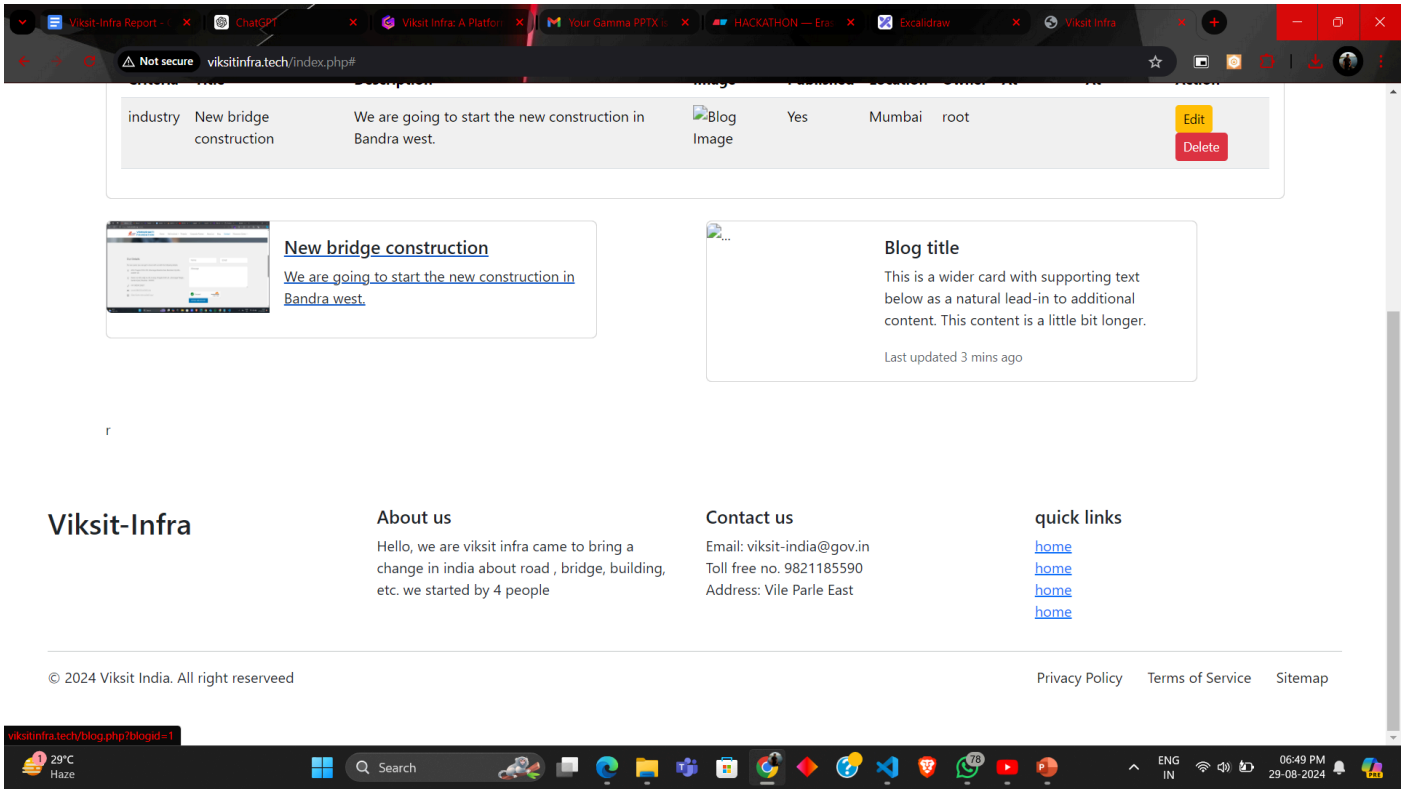
d)Citizen Voting Mechanism: Citizens have the opportunity to vote on which contractor should be awarded the project, integrating public opinion into the selection process.

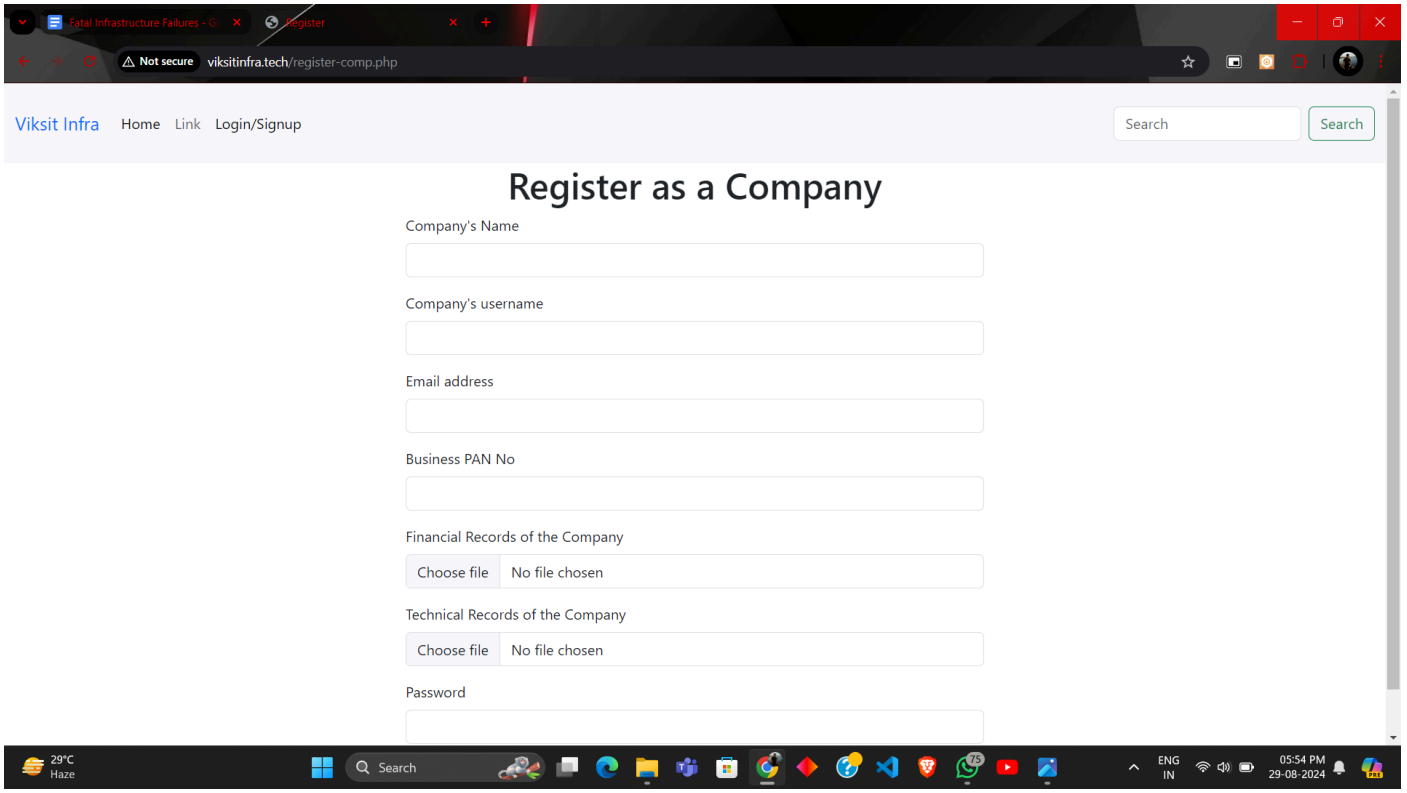
e)Government Admin Oversight: The platform includes a Government Admin Page for verifying budgets, technical data, managing audits, and checking citizen records, ensuring thorough oversight and compliance.

f)Contractor Bid Transparency: The bid amounts submitted by contractors are publicly displayed, enhancing transparency in the bidding process.

7)Screenshots:



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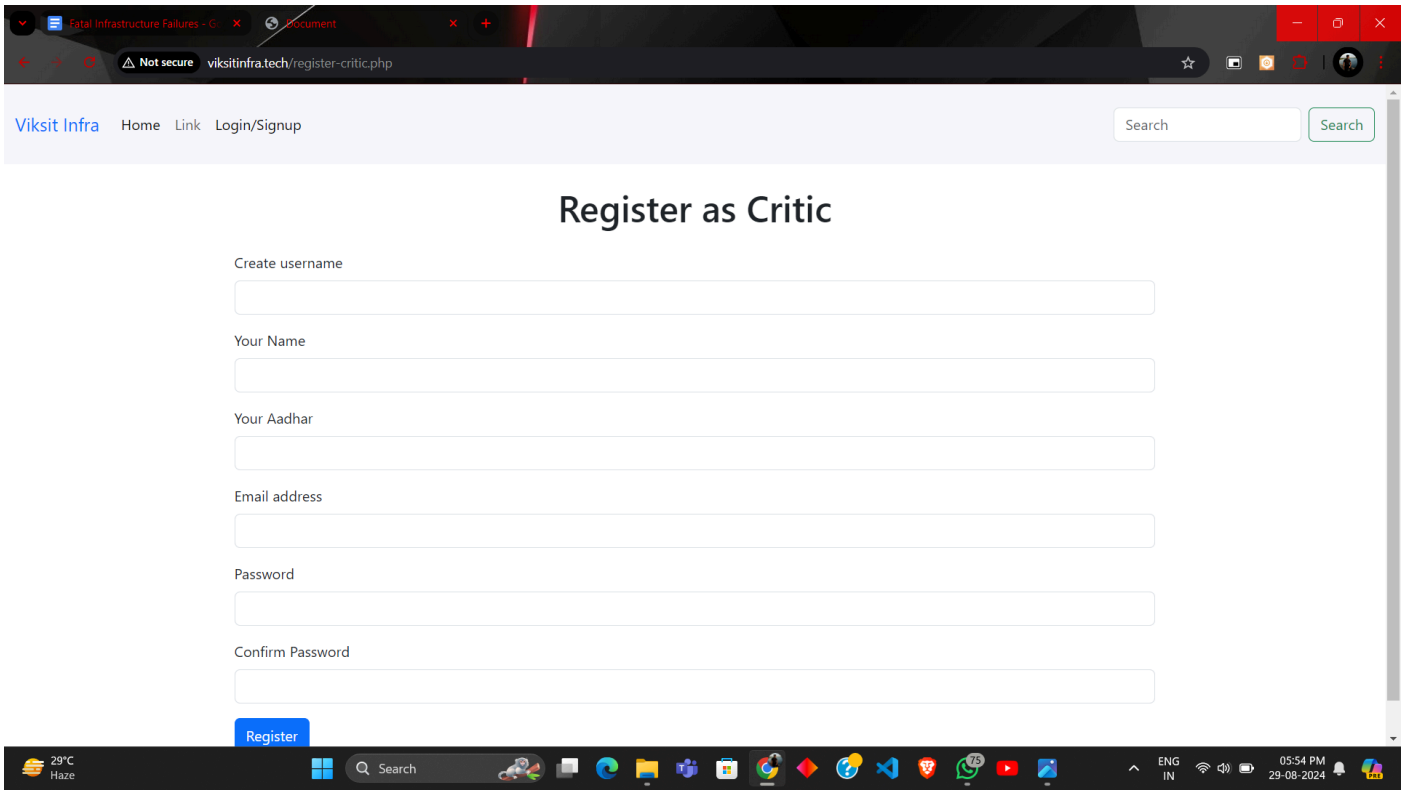
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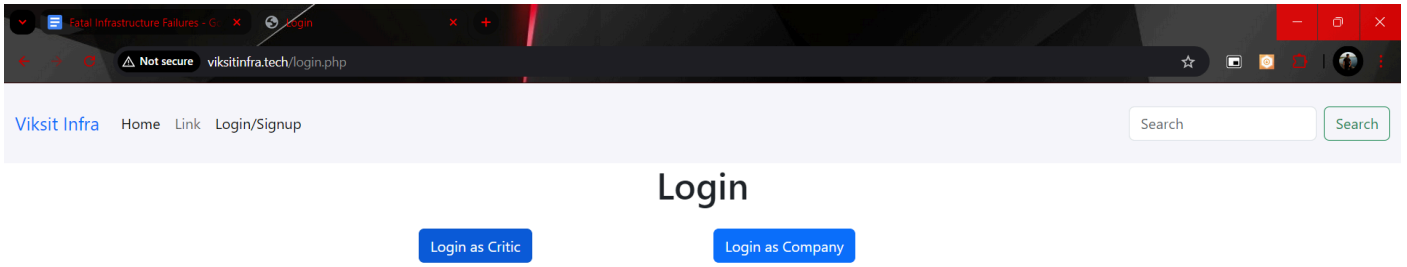
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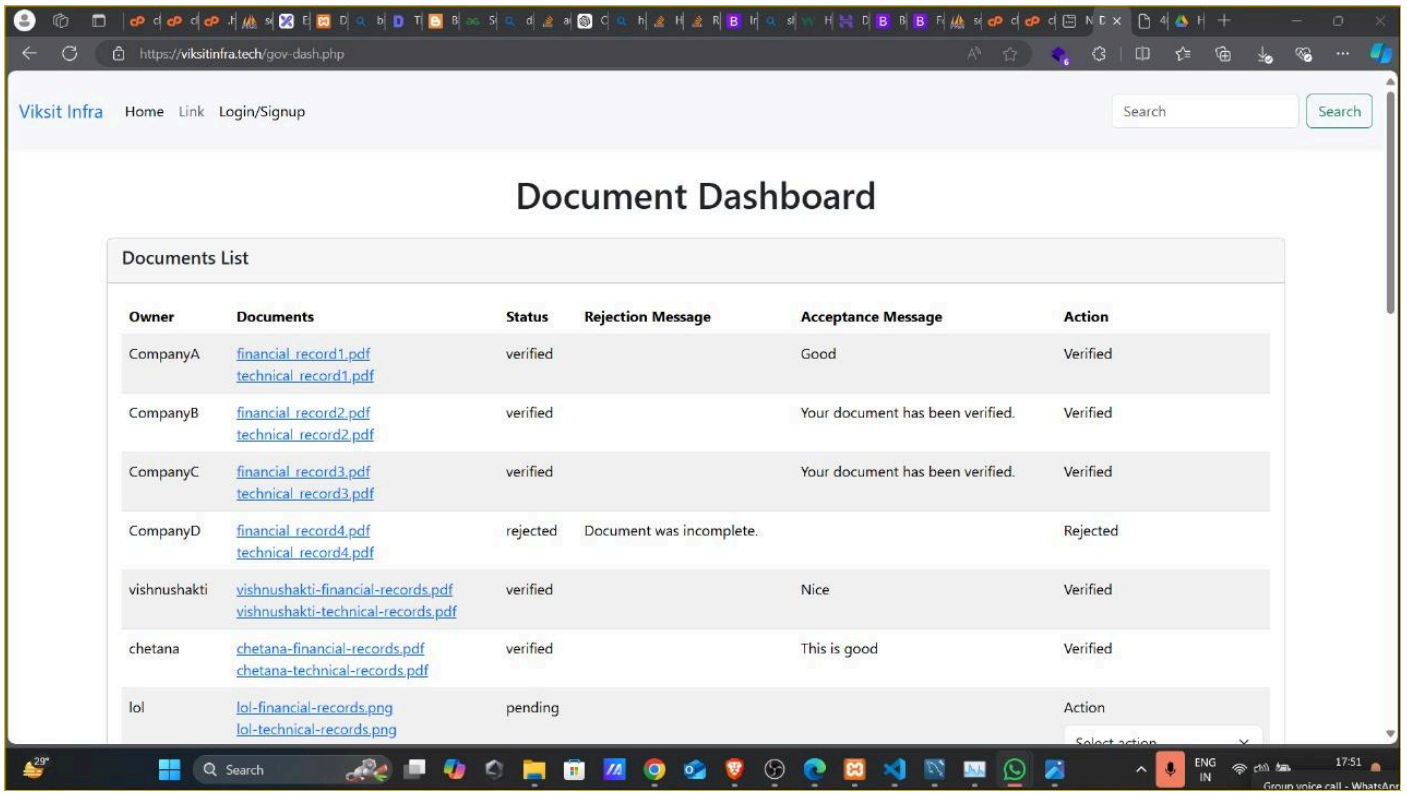
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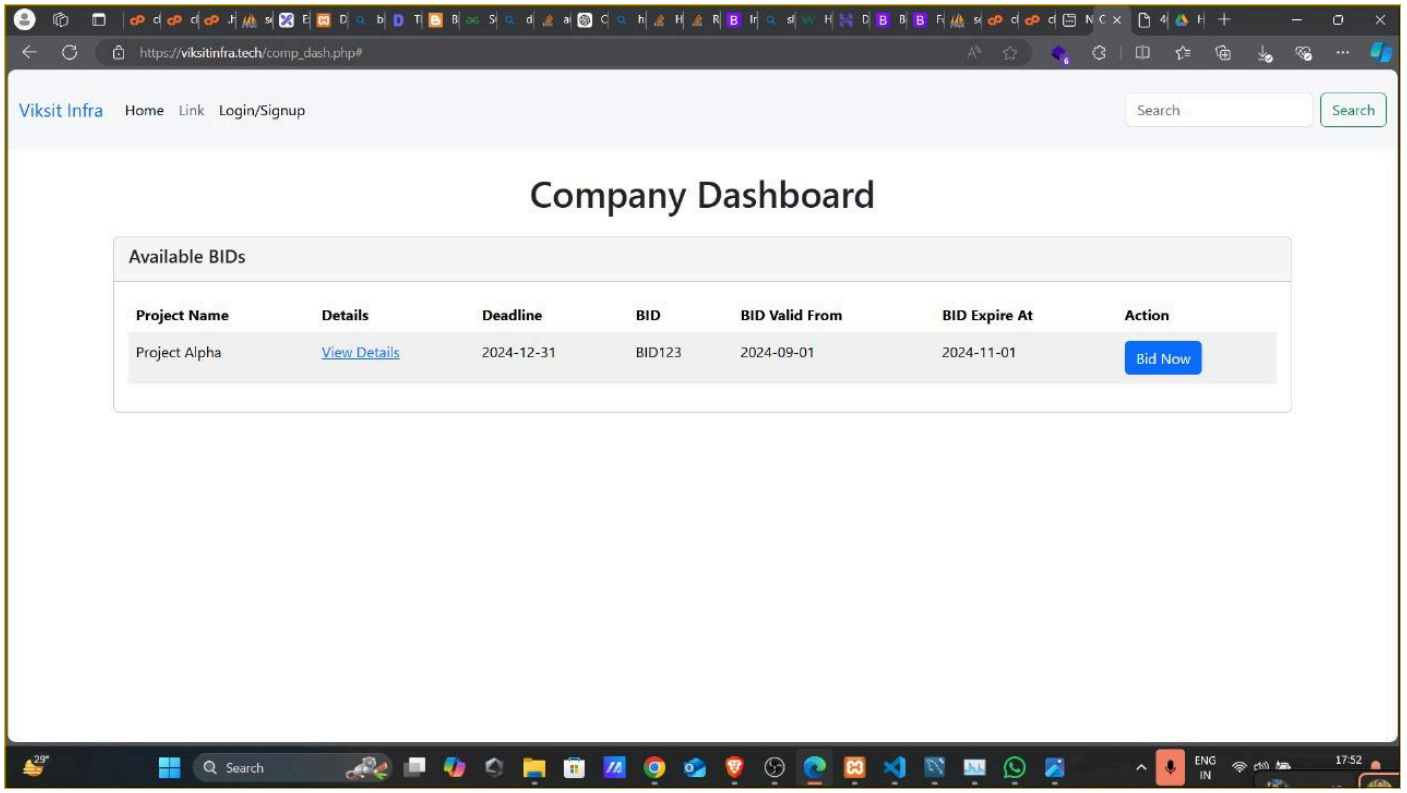

8)Conclusion:

The current state of infrastructure development in India is severely compromised due to systemic issues, particularly the reliance on L1 contracts, which prioritize the lowest bid over quality and experience. This approach has led to numerous infrastructure failures, resulting in significant loss of life and public funds. The proposed solution, a Transparent Web Platform, aims to address these issues by enhancing transparency, reducing corruption, and involving citizens in the contractor selection process. By implementing a multi-criteria contractor selection framework and providing detailed contractor profiles, the platform seeks to ensure that contracts are awarded based on merit rather than cost alone. This approach is expected to lead to higher-quality infrastructure projects and rebuild public trust in government processes.

9)Resource links for our project:-

Github Link:- https://github.com/sahil1330/viksit-infra

Youtube Links: https://www.youtube.com/live/sYrIuMIlGTg?si=Wgt-SEPRo2jEanlY

https://www.youtube.com/live/msUEH_X_p2w?si=nJTx9l0WEBy3aXKS

https://www.youtube.com/live/R6LLzKNEYkg?si=P7YG2ZfZgrtdQe2G

https://www.youtube.com/live/uLZrfU-gHzc?si=1ESDgeUiVFCZFkxr

https://www.youtube.com/live/kbK1ZBYWX5U?si=UFRSsFAadZA_ffr9

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https://www.youtube.com/live/hgCRzT_rfMc?si=5CcCLtyIH9TrPtyI

https://www.youtube.com/live/hjgVzwXHOAA?si=wJ1SwGGOsnwmdQ9d

https://www.youtube.com/live/5Mkuy0wHEpU?si=3yd0ohgewM-0WhP7

https://www.youtube.com/live/uDE3xt38kbw?si=4GmHO3WQft9WGxUX

Terms and Conditions for Viksit Infra Platform

Effective Date: [29-08-2024]

1. Introduction

- Welcome to Viksit Infra, a transparent web platform designed to enhance the transparency and accountability of government infrastructure projects. By accessing or using our platform, you agree to comply with and be bound by the following terms and conditions.

2. Eligibility

- Only registered users are allowed to access certain features of the platform. By registering, you represent that you are eligible to form a legally binding contract under applicable law.

3. User Responsibilities

- **Accuracy of Information:** Users are responsible for providing accurate and truthful information during registration and when posting reviews or feedback.
- **Compliance with Laws:** Users agree to comply with all applicable local, state, and national laws when using the platform.
- **Prohibited Conduct:** Users are prohibited from engaging in activities that may harm the platform, other users, or the integrity of the bidding process, including but not limited to fraudulent activities, posting false information, or attempting to manipulate the voting mechanism.

4. Contractor Profile Information

- **Accuracy:** Contractors must ensure that the information provided in their profiles, including budgets, technical details, and performance history, is accurate and up to date.
- **Verification:** The platform reserves the right to verify the information provided by contractors. Any false or misleading information may result in disqualification from bidding.

5. Citizen Voting

- **Participation:** Registered citizens are allowed to vote on which contractor should be awarded a project. Each citizen is entitled to one vote per project.
- **Voting Integrity:** Users must not engage in activities that could compromise the integrity of the voting process, such as creating multiple accounts or using automated systems to cast votes.

6. Government Admin Oversight

- **Verification Rights:** Government administrators have the authority to verify budget proposals, technical data, and other project details submitted by contractors.
- **Audit Scheduling:** Government administrators are responsible for scheduling and managing audits related to the projects and contractors.

7. Limitation of Liability

- **No Warranty:** The platform is provided "as is" without any warranties, express or implied. The platform does not guarantee the accuracy or reliability of any information provided by users or contractors.
- **Liability Limitation:** The platform, its developers, and affiliates will not be liable for any direct, indirect, incidental, or consequential damages arising from the use of the platform, including but not limited to loss of profits, data, or other intangibles.

8. Intellectual Property

- **Ownership:** All content on the platform, including text, graphics, logos, and software, is the property of Viksit Infra and protected by applicable intellectual property laws.
- **License:** Users are granted a limited, non-exclusive, non-transferable license to use the platform for personal or governmental purposes, as applicable.

9. Termination

- **Suspension or Termination:** The platform reserves the right to suspend or terminate user access to the platform at any time, with or without notice, for any reason, including but not limited to a violation of these terms and conditions.
- **Effect of Termination:** Upon termination, users must cease all use of the platform and any associated services.

10. Privacy

- **Data Collection:** The platform collects personal data necessary for registration, voting, and other functionalities. Users consent to the collection and use of this data as described in the platform's Privacy Policy.
- **Data Protection:** The platform implements appropriate technical and organizational measures to protect user data from unauthorized access, disclosure, or misuse.

11. Amendments

- **Modification of Terms:** The platform reserves the right to amend these terms and conditions at any time. Users will be notified of any significant changes, and continued use of the platform constitutes acceptance of the revised terms.

12. Contact Information

- For any questions or concerns regarding these terms and conditions, please contact us at www.viksitin1@viksitinfra.tech